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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/565,109	01/19/2006	Tomohiro Yabu	4633.0157PUS1	5480

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EXAMINER

ALI, MOHAMMAD M

ART UNIT	PAPER NUMBER
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3744

NOTIFICATION DATE	DELIVERY MODE
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09/03/2009

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

Office Action Summary	Application No. 10/565,109	Applicant(s) YABU ET AL.	
	Examiner MOHAMMAD M. ALI	Art Unit 3744	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 July 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 13-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 13-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 13-23 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Nonaka et al (JP 8-189667A) in view of Boku et al (JP 2001-241693A) and Dunne (US 6,102,107). Nonaka et al disclose a humidity control system comprising a refrigerant circuit comprising a compressor (1) for compressing a refrigerant, a first adsorber (2) formed by an adsorption heat exchanger (See Para [0052]) having the refrigerant flowing inside there through and having an adsorbent (2) carried on the outer surface for adsorbing or desorbing moisture, an expansion valve (6) for expanding the refrigerant, a second adsorber (3) formed by an adsorption heat exchanger (See Para [0052]) having the refrigerant flowing inside there through and having an adsorbent (3) carried on the outer surface for adsorbing or desorbing moisture, and a four-way selector valve (7); wherein the first adsorber (2) and second adsorber (3) control the amount of humidity of air to be

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processed using an adsorbent, the refrigerant circuit thermally regenerates the first adsorber (2) and second adsorber (2) with heat of the refrigerant (according to the position of the selector valve 6). Nonaka et al disclose the invention substantially as claimed as stated above except that the humidity control system is configured so that the sensible heat zone (R) for the refrigerant is larger than that for R22 when compared in terms of refrigeration cycles having substantially the same discharge temperature because this portion of recitation depends on supercritical the type of refrigerant specially by CO₂ refrigerant and a plurality of fins and heat transfer pipes passing through the fins, the adsorbent being carried on the outer surface of the fins. See Figs 6-8 and the enclosed translation. Boku et al teach the use of a CO₂ refrigerant and as such inherently teach the humidity control system is configured so that the sensible heat zone (R) for the refrigerant is larger than that for R22 when compared in terms of refrigeration cycles having substantially the same discharge temperature. See the abstract. Dunne teaches the use of a plurality of fin plates (18, see Fig 1) and heat transfer pipes (14, see Fig. 1) passing through the fins (18), the adsorbent (22) being carried out on the outer surfaces of the fins. See Figs 1-2, column 8, lines 11-20.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the humidity control system of Nonaka et al in view of Boku et al and Dunne such that CO₂ (carbon dioxide) refrigerant could be provided in order to configure the humidity control system so that sensible heat zone for the refrigerant is larger than that for R22 and plurality of tubes having plurality of fins with

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adsorbent material surfaces in order to carryout humidity control system in an efficient manner.

Regarding claims 13 and 19, the above combined disclosure of Nonaka et al and Boku et al and Dunne meet the limitations of claims 13 and 19.

Regarding claims 14 and 20, Boku et al disclose the refrigerant circuit with CO refrigerant circuit is configured so that the pressure of the refrigerant in the high-pressure side of the refrigeration cycle is higher that the critical pressure of the refrigerant.

Regarding claims 15 and 21, R32 refrigerant being a well known in the art and it is an obvious implementation in place of CO₂ refrigerant and the refrigerant circuit of Boku et al. Both Nonaka et al and Boku et al are capable of being served by single R32 refrigerant.

Regarding claims 17 and 23, Boku et al disclose CO₂ refrigerant. See Abstract.

Regarding claim 18, Nonaka et al disclose plurality of adsorber fins (2/3, Figs. 6 and 8); Dunne also disclose plurality of adsorbent fins 18.

Regarding claim 22, mixed refrigerant containing R32 is well known in the refrigerant circuit. An ordinary skill of art being well known with mixed refrigerant containing R32 is also able to form a mixed refrigerant containing R32 in the range of 75 weight % inclusive to 100 weight % exclusive.

Response to Arguments

Applicant's arguments with respect to claims 13-23 have been considered but are moot in view of the new ground(s) of rejection as explained above.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MOHAMMAD M. ALI whose telephone number is (571)272-4806. The examiner can normally be reached on maxiflex.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cheryl J. Tyler can be reached on 571-272-4808. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Mohammad M Ali/
Primary Examiner, Art Unit 3744